

Security

Notes and recommendations on occupational safety in handling plastic pipes

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1. Loading and unloading of transport vehicles

Danger to people and material:

- Danger from tipping over, falling down, shifting or slipping of the load
- Danger due to falling bundles or individual detaching individual pipes
- Danger due to weather-related factors (e.g. wind, ice, rain)
- Danger from traffic at the loading site
- Damage to the load by lift fork, belt buckles and other mechanical effects

General safety instructions:

- Wear the required PPE, especially safety shoes and safety helmets, within the construction site and loading area
- Work may only be carried out by trained, competent and instructed personnel and instructed at the respective place of work (vehicle and lifting equipment operators, slingers, assistants)
- Use of suitable, approved and functional loading vehicles, equipment and aids (forklift, mobile crane, excavator, wheel loader, slinging equipment, traverses, etc.)
- Prior coordination of the work processes and communication signs when starting loading activities (e.g. between crane driver and slinger)
- Do not stand under suspended loads
- Do not stay in the working area of the forklift trucks
- Do not climb on unsecured bundle!
- Applicable regulations and rules (e.g. traffic rules, OSH standards) as well as specific operating instructions must be observed

Organisational protective measures:

- Only suitably qualified persons may be entrusted with loading, unloading and handling.
- When using lifting aids: Lifting equipment may only be operated independently by persons who are physically and mentally suitable, who have been trained to operate or maintenance of the hoist and who are qualified to do so.
- Only suitable vehicles and aids may be used.
- Before commencing the loading activity, the proper condition of the work equipment must be checked. If any deficiencies are found work may not be started.
- The centre of gravity of the load must be as

low as possible and must be chosen in accordance with the requirements of the vehicle

- If form-fit loading is not possible (e.g. for reasons of load distribution), frictional loading must be used. Drums must always be secured against rolling away.
- Secured and free manoeuvring area of the industrial trucks
- Load-bearing and levelled working area for barrier-free loading / unloading and floor conveyance
- Contact (e.g. eye contact) with the driver of the vehicle, when entering the danger zone
- Firm and level driving surface for forklift trucks / Stable base for mobile crane support

• Loading:

- ▶ Securing the containers against tipping over / falling down until the belt securing device is fitted (e.g. by forklift trucks)
- ▶ Securing the pallets in layers
- ▶ Observe the centre of gravity and the axle loads
- ▶ Stacking sequence for gentle and tilt-proof loading

• Unloading:

- ▶ Securing the containers against tipping over / falling down while loosening the belt securing devices with suitable aids (e.g. wheel loader, excavator, forklift)
- ▶ Loosening of the pack securing devices layer by layer and unloading of the individual packs
- ▶ Non-tipping and non-slip parking of the bundles; Additional securing if necessary
- ▶ When unloading pallets with pipes the dimension-related stacking sequence must be observed
- ▶ Observe the storage instructions when placing

Technical instructions and advice:

- Protective devices must be used
- The applicable regulations for the industrial truck must be observed
- Visual inspection of the position and strength of the production-side bindings and wooden frames (pallets / drums) before loading / unloading.
- For pallet or pipe loading:
 - ▶ Transport securing of bundles in layers (pipe pallets) by strapping
 - ▶ Material-friendly stacking (wood-on-wood)
 - ▶ Final transport securing of the of the entire load (pallet stack)
- For drum loading:
 - ▶ Drums must be loaded upright (tilt-proof) onto suitable special vehicles (type "Mulde")
 - ▶ Use suitable aids for loading drums (e.g. load-distributing traverse)
 - ▶ Separate transport securing of individual, standing drums
 - ▶ Final transport securing of the of the entire load (drums)
- Danger of containers (pallets / drums) tipping over before and during strapping → Securing (e.g. by loading vehicle)
- Additional protection of the pipe material against damage when strapped (e.g. belt protectors, felt/rubber separating layers)
- The centre of gravity of the load must be chosen as low as possible (heavy packages in lower position).
- If possible, keep the centre of gravity of the load on the longitudinal of the vehicle
- Even load distribution according to the permissible axle loads

The Gerodur load securing checklist (current version) also applies



2. Placing and intermediate storage of pipe containers

Risk evaluation:

- Overturning of bundles / instability of the stacks due to storage-related deformation of the deformations of the pipe material (often: thermal stress)
- Damage and contamination of the pipe material

General safety instructions:

- Wear the required PPE, especially safety shoes and helmets, within the construction site and loading area.
- Do not climb on unsecured bundles!
- Work may only be carried out by trained, competent and instructed personnel and instructed at the respective place of work
- Use of suitable, approved and functional lifting and conveying vehicles, - equipment and aids
- Applicable rules and regulations and specific operating instructions must be observed

Organisational protective measures:

- Secured storage area (avoid access by unauthorised persons) → if necessary, enclosure and marking of the storage area
- Suitable („stone-free“), stable and levelled storage surface - additional stabilisation and safety measures for uneven or inclined ground

Technical instructions and advice:

- Pallet storage (straight lengths):
 - ▶ For longer planned intermediate storage, if necessary additional measures to secure / stabilise → Strapping
 - ▶ Max. stacking height 1.0 m for loose-bound bundles of pipes
 - ▶ Thermally induced linear expansions of the pipe material and possible wind loads can influence the stacking stability and must be taken into account depending on the situation (if necessary, securing measures or covers)
 - ▶ Thin-walled pipes in particular tend to temperature changes (one-sided solar radiation) to deformations / curvatures (so-called „banana effect“) → Prevent cover by light-coloured material

- Drum storage:
 - ▶ Store drums individually → stable supports against rolling away sideways
- No loosening or removal of the production-side (strapping) during storage!

The handling and storage instructions „Piping Systems - products and design“ of Gerodur apply (current version in each case).

3. Connecting and laying PE pipes

Hazard assessment:

- Risk of injury in the area of the welding machines (suspended processing equipment, risk of burns on the heating element, rotating planer, moving clamping device)
- Risk of injury due to pipe ends (drums)
- Danger of accidents when lifting and moving of the welded pipeline
- Attach the end of the pipe to the pulling device to be uncoiled firmly and securely (e.g. boom of the drilling rig, wheel loader or excavator)
- Loosen the transport securing (strapping) at the end of the drum only when pipeline is sufficiently locked (danger of the pipe end snapping back).

General safety instructions:

- Wear the required PPE, especially safety shoes and helmets, within the construction site and loading area.
- Do not climb on unsecured bundles!
- Applicable rules and regulations and specific operating instructions must be observed
- Do not stand under suspended loads
- Do not stay in the working area of the industrial trucks

The processing and installation guidelines „Piping Systems - products and design“ of Gerodur apply (current version in each case).

Organisational protective measures:

- Work may only be carried out by trained, competent and instructed personnel and instructed at the respective place of work
- Use of suitable, approved and functional lifting and handling vehicles, equipment and aids
- Use of suitable and approved welding machines (DVS 2208-1)
- Follow the operating and safety instructions of the welding machine manufacturer.

Technical instructions and advice:

- Suitable surface for installation of the welding equipment
- Safe installation of the power supply (if necessary drive-over protection / wetness protection at plug connections)
- Safe pipe transport by means of sufficiently and stable roller stands
- Do not reach between clamping devices under pressure
- Carefully loosen the strapping of the pipe pallets; if necessary, take safety measures against the stacks rolling away
- Non-slip transport of the pipe
- Do not stand between unsecured pipe guides
- Use suitable lifting equipment and aids to hang the drums stable for unwinding

